

Claims

- 1 1. A composite comprising a resin and fiber,
2 wherein the fiber is cellulosic or lignocellulosic fiber
3 that has been sheared.
- 1 2. The composite of claim 1, comprising at least
2 about 5% by weight sheared fiber.
- 1 3. The composite of claim 1, wherein the fiber is
2 newsprint.
- 1 4. The composite of claim 1, wherein the fiber is
2 jute.
- 1 5. The composite of claim 1, wherein the fiber is
2 kenaf.
- 1 6. The composite of claim 1, wherein the fiber is
2 magazine paper.
- 1 7. The composite of claim 1, wherein the fiber is
2 bleached kraft board.
- 1 8. The composite of claim 1, wherein the fiber is
2 poly-coated paper.
- 1 9. The composite of claim 1, wherein the resin is
2 a thermoplastic resin.
- 1 10. The composite of claim 9, wherein the resin is
2 selected from the group consisting of polystyrene,

3 polycarbonate, polybutylene, thermoplastic polyesters,
4 polyethers, thermoplastic polyurethane, PVC, and Nylon.

1 11. The composite of claim 9, wherein the
2 thermoplastic resin is polyethylene.

1 12. The composite of claim 9, wherein the
2 thermoplastic resin is polypropylene.

1 13. The composite of claim 1, wherein the composite
2 comprises about 30% to about 70% by weight resin and about
3 30% to about 70% by weight fiber.

1 14. A composite comprising polyethylene and fiber,
2 wherein the fiber is cellulosic or lignocellulosic fiber
3 that has been sheared.

1 15. A composite comprising a resin and fiber,
2 wherein the composite has a flexural strength of at least
3 3,000 psi, wherein the fiber is cellulosic or
4 lignocellulosic fiber that has been sheared.

1 16. The composite of claim 15, wherein the
2 composite has a flexural strength of at least 6,000 psi.

1 17. The composite of claim 15, wherein the
2 composite has a flexural strength of at least 10,000 psi.

1 18. A process for manufacturing a composite, the
2 process comprising shearing cellulosic or lignocellulosic
3 fiber, and combining the sheared cellulosic or
4 lignocellulosic fiber with a resin.

1 19. The process of claim 18, wherein the resin is a
2 thermoplastic resin.

1 20. The process of claim 18, wherein the step of
2 shearing the cellulosic or lignocellulosic fiber comprises
3 shearing with a rotary knife cutter.

1 21. A process for preparing a texturized fibrous
2 material, the process comprising:
3 shearing a cellulosic or lignocellulosic material
4 having internal fibers.

1 22. The method of claim 21, wherein said cellulosic
2 or lignocellulosic material is selected from the group
3 consisting of flax, hemp, cotton, jute, rags, paper, paper
4 products, and byproducts of paper manufacturing.

1 23. The method of claim 21, wherein the cellulosic
2 or lignocellulosic material is pulp board.

1 24. The method of claim 21, wherein the cellulosic
2 or lignocellulosic material is a synthetic material.

1 25. The method of claim 21, wherein the cellulosic
2 or lignocellulosic material is a non-woven material.

1 26. The method of claim 21, wherein the cellulosic
2 or lignocellulosic material is poly-coated paper.

1 27. The method of claim 21, wherein at least about
2 50% of the fibers have a length/diameter ratio of at least
3 about 5.

1 28. The method of claim 21, wherein at least about
2 50% of the fibers have a length/diameter ratio of at least
3 about 25.

1 29. The method of claim 21, wherein at least about
2 50% of the fibers have a length/diameter ratio of at least
3 about 50.

1 30. A fibrous material comprising a cellulosic or
2 lignocellulosic material, wherein said cellulosic or
3 lignocellulosic material is sheared to the extent that it
4 has a bulk density less than about 0.5 g/cm^3 .

1 31. The fibrous material of claim 30, wherein said
2 material is incorporated into a structure or carrier.

1 32. The fibrous material of claim 31, wherein the
2 structure or carrier also comprises a fibrous material
3 having a bulk density less than about 0.5 g/cm^3 .

1 33. The fibrous material of claim 30, wherein said
2 texturized fibrous material has a bulk density less than
3 about 0.2 grams per cubic centimeter.

1 34. The fibrous material of claim 30, wherein said
2 texturized fibrous material has a bulk density on the order
3 of about 0.1 grams per cubic centimeter.

1 35. The fibrous material of claim 30, wherein said
2 cellulosic or lignocellulosic material comprises paper or
3 paper products.

1 36. A composition comprising the fibrous material
2 of claim 30 and a chemical or chemical formulation.

1 37. The composition of claim 36, wherein the
2 chemical formulation comprises a pharmaceutical.

1 38. The composition of claim 36, wherein the
2 chemical formulation an agricultural compound.

 39. The composition of claim 36, wherein the
chemical formulation comprises an enzyme.

1 40. A composition comprising the fibrous material
2 of claim 30 and a liquid.

1 41. A composition comprising the fibrous material
2 of claim 30 and particulate, powdered, or granulated solid.

1 42. The composition of claim 41, wherein the solid
2 comprises plant seed.

1 43. The composition of claim 41, wherein the solid
2 comprises a foodstuff.

1 44. The composition of claim 41, wherein the solid
2 comprises bacteria.

1 45. The composite of claim 1, further comprising an
2 inorganic additive.

 46. The composite of claim 45, wherein the
inorganic additive is selected from the group consisting of
calcium carbonate, graphite, asbestos, wollastonite, mica,

glass, fiber glass, chalk, talc, silica, ceramic, ground construction waste, tire rubber powder, carbon fibers, and metal fibers.

1 47. The composite of claim 46, wherein the
2 inorganic additive comprises from about 0.5% to about 20% of
3 the total weight of the composite.

1 48. The composite of claim 1, wherein said
2 composite is in the form of a pallet.

1 49. The composite of claim 48, wherein said pallet
2 is injection molded.

1 50. The composite of claim 1, wherein said
2 composite is in the form of an article selected from the
3 group consisting of panels, pipes, decking materials,
4 boards, housings, sheets, poles, straps, fencing, members,
5 doors, shutters, awnings, shades, signs, frames, window
6 casings, backboards, wallboards, flooring, tiles, railroad
7 ties, forms, trays, tool handles, stalls, bedding,
8 dispensers, staves, films, wraps, totes, barrels, boxes,
9 packing materials, baskets, straps, slips, racks, casings,
10 binders, dividers, walls, indoor and outdoor carpets, rugs,
11 wovens, and mats, frames, bookcases, sculptures, chairs,
12 tables, desks, art, toys, games, wharves, piers, boats,
13 masts, pollution control products, septic tanks, automotive
14 panels, substrates, computer housings, above- and below-
15 ground electrical casings, furniture, picnic tables, tents,
16 playgrounds, benches, shelters, sporting goods, beds,
17 bedpans, thread, filament, cloth, plaques, trays, hangers,
18 servers, pools, insulation, caskets, bookcovers, clothes,

19 canes, crutches, and other construction, agricultural,
20 material handling, transportation, automotive, industrial,
21 environmental, naval, electrical, electronic, recreational,
22 medical, textile, and consumer products.

1 51. The composite of claim 1, wherein said
2 composite is in the form of a fiber, filament, or film.

1 52. A composite comprising a resin and fibrous
2 reinforcement, wherein the fibrous reinforcement has a bulk
3 density less than about 0.5 g/cm³.

1 53. The composite of claim 52, wherein the fibrous
2 reinforcement has a bulk density less than about 0.2 g/cm³.